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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/963,698	09/26/2001	Francis Barany	19603/3355 (CRF D-1595E)	2018
7590 05/30/2006			EXAMINER	
Michael L. Goldman NIXON PEABODY LLP Clinton Square P.O. Box 31051 Rochester, NY 14603			LIU, SUE XU	
			ART UNIT	PAPER NUMBER
			1639	
DATE MAILED: 05/30/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/963,698

Applicant(s)

BARANY ET AL.

Examiner

Sue Liu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 89-112 is/are pending in the application.
- 4a) Of the above claim(s) 98-108 and 110 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 89-97, 109, 111 and 112 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4/13/06.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Note the change of examiner for this application. (Please see the Conclusion paragraph for information on any future correspondence.)

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/13/06 has been entered.

Claim Status

2. Claims 1-88 and 113-147 have been canceled;
Claims 89-112 are currently pending;
Claims 98-108, and 110 have been withdrawn;
Claims 89-97, 109, 111, and 112 are being examined in this application.

Election/Restrictions

3. Claims 98-108 (dependent on claim 99), 110 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species invention, there being no

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allowable generic or linking claim. Election was made **without** traverse in Paper No. 9 (filed 6/24/03) and acknowledged in previous office actions.

Information Disclosure Statement

4. The information disclosure statement filed 04/13/2006 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because the following references are missing date information as listed in the filed IDS: citation number 63. It has been placed in the application file, but the information referred to therein regarding the one above said references has not been considered as to the merits. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609.05(a).

Specification

5. Applicant is reminded of the proper language and format for an **abstract** of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of **50 to 150 words**. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

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The Abstract of the instant specification exceeds 150 words. Appropriate correction is requested.

Claim Rejections Withdrawn (ODP)

6. Applicants filed Terminal Disclaimer in regard to US 6,506,594 and the co-pending application 10/272,152 (on 8/15/2005) is acknowledged. Thus, the following Obviousness-type double patenting rejections are withdrawn:

A.) Claims 89-97, 109, and 111-112 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-75 of U.S. Patent No. 6,506,594 B1 (reference provided by applicants 4/26/04).

B.) Claims 89-97, 109, and 111-112 provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-153 of copending Application No. 10/272,152.

Claim Rejections Maintained (102 art rejection)

7. The following Claim rejections as set forth in the previous office actions are maintained, and the rejections are incorporated herein by reference in their entireties:

A.) Claims 89, 93 are rejected under 35 U.S.C. 102(b) as being anticipated by Lipshutz et al (BioTechniques, Vol 19, No. 3, 1995, pages 442-447) for the reasons set forth in the previous office action mailed on 9/8/03.

B.) Claims 89 and 93 are rejected under 35 U.S.C. 102(b) as being anticipated by Fodor et al (Nature, vol. 364, August 1993, pages 555-556) for the reasons set forth in the previous office action mailed on 9/8/03.

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C.) Claims 89-93, 96-97, 109, 111 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent 5,700,637 (SOUTHERN) (the reference provided by applicants in the IDS filed on 8/9/04).

D.) Claims 89, 91, 93, 96 and 111 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent 5,837,832 (Chee et al) (reference provided by applicants in IDS filed on 4/26/04).

E.) Claims 89-97, 109 and 111-112 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent 5,510,270 (Fodor et al).

F.) Claims 89-94, 96-97, 109, 111-112 are rejected under 35 U.S.C. 102(e) as being anticipated by US Patent 5,527,681 (HOLMES et al).

Discussion and Answer to Argument (art rejection)

8. Applicants traversed over the claim rejections over prior art under 35 U.S.C. 102 in the reply filed on 4/13/06.

Applicants argue that the cited references do not teach the claimed invention as recited in the newly amended claims. Specifically, applicants traversed over each of the Lipshutz, Fodor (1993), Southern, Chee, Fodor (US patent), and Holmes references. Applicant's argument over each cited reference is addressed below.

9. Applicant's arguments have been fully considered but they are not persuasive for the following reasons (in addition to reasons of record):

Lipshutz:

Applicants argue that Lipshutz neither discloses nor suggests attaching multimer nucleotides at activated array positions. Applicants further argue that Lipshutz teaches attaching single nucleosides to sites that have been illuminated, and serially attaching oligonucleotides.

Applicant's arguments have been considered and are not persuasive. Contrary to applicant's assertion, Lipshutz does not teach attaching single oligonucleotides one at a time. Lipshutz teaches simultaneous synthesis of oligomers (read on multimers because oligomers are comprised of multiple nucleotides by definition) as shown in Figure 1 of the reference. This also reads on attaching multimers to solid substrate because the end products of the combinatorial oligonucleotide synthesis on a solid substrate are attached oligomers. The reference further teaches, as an example, a set of all 15-mers (i.e. oligonucleotides with 15 nucleotides) can be synthesized in 60 cycles under 10 hours (see pg 443, bridging para. of middle and right cols.), which is contrary to applicant's argument of "40 days" to synthesize and the argument of short oligonucleotides. Applicants also argue the commercial applicability of 8- to 10-mers, which is encompassed by the instant invention because 8- to 10-mers are encompassed by both "capture oligonucleotides" and "multimer nucleotides". In addition, the arguments regarding commercial applicability are irrelevant, because the reference anticipates the present invention regardless of commercial applicability.

Applicants further argue the Lipshutz reference neither discloses nor suggests using multimer nucleotides which are selected for attachment so that the capture oligonucleotides formed hybridize to complementary oligonucleotides under uniform hybridization conditions, as required by the instant claims. The phrase of "the multimer nucleotides are selected for attachment so that the capture oligonucleotides formed one the array hybridize with

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complementary oligonucleotides target sequences under uniform hybridization conditions” is a recitation of intended use or inherent property of the said “multimer nucleotides” or “capture oligonucleotides”. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 312 F.2d 937, 939, 136 USPQ 458, 459 (CCPA 1963).

Applicants assert that the recited intended use of the array does provide a structural distinction. The instant claim does not specify the target sequence, which can be any sequence. Hybridization between probes and target sequences depends mainly on the specific nucleic acid sequences. There is no showing that the recited “capture oligonucleotides” and “multimer nucleotides” are structurally (sequentially) different from the probes of the reference. The term “target sequences” recited in the instant claims is very broad and encompasses any sequences. The probes taught by the reference can hybridize to the target sequences under a given hybridization condition. Therefore, the recitation of intended use or inherent property of hybridization with target sequence does not offer any additional structural limitation for the instantly claimed invention, and does not demonstrate a structural difference from the reference’s teaching. Furthermore, the reference teaches using the generated array to hybridize with target nucleic acids (see pg 443, last para.), which reads on the intended use recited in the instant claim.

Applicants argue that “the probes in Lipshutz’s array carry the burden of both detecting a target nucleic acid and generating a signal correlated to detection of the target” is an important distinction between the reference and the instant invention. The purpose of the probes recited in the reference is irrelevant, because the method of generating the array of probes is not structurally different from the method claimed in the instant application.

Applicants further argue the intended use of the array for hybridization under uniform hybridization conditions. For support of the argument, applicant states “designing a plurality of capture probes to detect and signal detection of a plurality of different nucleic acid targets at one time on a single array (i.e. under uniform hybridization conditions) is a difficult task using Lipshutz’s technology.” It is known in the art, one of the major purposes of generating an array is to using a single chip to detect samples under one condition. As taught by Lipshutz et al, target sample is hybridize to the probes under a fixed set of hybridization conditions (see pg 443, last para. and pg444, left col.).

In support for arguing the inherent properties possessed by the instant invention, applicants states that “with the present invention achieves such improved results involves its use with ligase detection reaction (“LDR”).” First, there is no showing that the reference’s teaching does not possess the recited inherent properties. Second, the recited LDR is not claimed feature in the instant claims. In response to applicant's argument that the references fail to show certain features of applicant’s invention, it is noted that the features upon which applicant relies (i.e., tetramer) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Fodor et al (1993)

Applicants argue that the Fodor reference “neither discloses nor suggests forming an array capture oligonucleotides that hybridize with complementary oligonucleotide target sequences under uniform hybridization conditions.” Fodor teaches synthesizing oligonucleotides at specific locations or position on an array, which reads on linking oligonucleotides to a substrate surface, as recited in the instant specification. Similar to the discussion over the Lipshutz reference, the intended use and inherent property recitations do not provide additional structural limitation for the claimed invention, and therefore do not structurally distinguish the claimed invention over the reference’s teaching.

Southern et al

Applicants argue that the oligonucleotides forming the array are only disclosed by Southern et al to be formed from conventional nucleotides. However, applicants do not elaborate on how the disclosed “conventional nucleotides” are different from the nucleotides recited in the instant claims. Therefore, applicants have not demonstrated a structural difference between the claimed invention and the reference’s teaching. Similar to the discussion over the Lipshutz reference, the intended use and inherent property recitations do not provide additional structural limitation for the claimed invention, and therefore do not structurally distinguish the claimed invention over the reference’s teaching.

Chee et al

Applicants argue that “the oligonucleotide probes used on the subject chips of Chee do not constitute capture probes in accordance with the present invention where the capture oligonucleotides on the array hybridize with complementary oligonucleotide target sequences under uniform hybridization conditions.” However, applicants have not demonstrated a structural difference between the claimed invention and the reference’s teaching. Similar to the discussion over the Lipshutz reference, the intended use and inherent property recitations do not provide additional structural limitation for the claimed invention, and therefore do not structurally distinguish the claimed invention over the reference’s teaching.

Fodor (Patent)

Applicants argue that Fodor (patent) “neither discloses nor suggests forming an array using capture oligonucleotides...” However, applicants have not demonstrated a structural difference between the claimed invention and the reference’s teaching. Similar to the discussion over the Lipshutz reference, the intended use and inherent property recitations do not provide additional structural limitation for the claimed invention, and therefore do not structurally distinguish the claimed invention over the reference’s teaching.

Holmes

Applicants argue that Holmes “neither discloses nor suggests forming an array using capture oligonucleotides...” However, applicants have not demonstrated a structural difference between the claimed invention and the reference’s teaching. Similar to the discussion over the Lipshutz reference, the intended use and inherent property recitations do not provide additional

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structural limitation for the claimed invention, and therefore do not structurally distinguish the claimed invention over the reference's teaching.

New Rejections

Claim Rejections - 35 USC § 112

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 89-97, 109, 111 and 112 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claim language of Claim 89 is convoluted and confusing, and therefore renders the said claim and its dependent claims indefinite. Claim 89 recites the term "multimer nucleotides", which is not clearly defined in either the claims or the specification. The term "multimer nucleotides" can be interpreted to have different meanings such as a nucleic acid strand with multiple nucleotides, i.e. a normal single or double stranded DNA; branched nucleic acid with multiple DNA strands connecting to a single point; multiple repeating units of nucleic acid sequences in one strand of DNA; nucleotides that comprise multiple units; oligomers comprising partial DNA and RNA strands; or simply multiple nucleotides; etc. It is not clear from the claim language to what kind of "multimer nucleotides" the claim is referring. The instant specification does not provide a definition for this unconventional term that is not generally used in the art for a specific defined meaning. Therefore, an ordinary skilled artisan would not be able to distinctly define the metes and bounds of the claimed invention.

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In addition, Claim 89 recites both “capture oligonucleotides” and “multimer nucleotides”, and the nexus between the two terms is not clearly recited in the claim. Claims 93, 111, and 112 also recite the term “capture oligonucleotides”. The claim language can be interpreted to mean that both of the said terms are referring to the same entities, or the two terms are referring to different oligonucleotides. That is the claimed invention can be interpreted to mean a method of forming a microarray with both “capture oligonucleotides” and “multimer nucleotides” attached thereon.

Claim 109 recites the limitation "the surface or linker". There is insufficient antecedent basis for this limitation in the claim. Claim 89 recites “surfaces or linkers” in plural, but Claim 109 recites a singular “surface” or “linker”.

Claim 111 recites the limitation "the nucleotides" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Conclusion

No claims are allowed.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sue Liu whose telephone number is 571-272-5539. The examiner can normally be reached on M-F 9am-3pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Paras can be reached on 571-272-4517. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SL
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5/23/2006


MARK SHIBUYA, PH.D.
PATENT EXAMINER